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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/557,859	04/26/2000	Douglas L. Robinson	OPT-11	1361

20808 7590 07/26/2002

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EXAMINER

STULTZ, JESSICA T

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 07/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/557,859

Applicant(s)

ROBINSON ET AL.

Examiner

Jessica T Stultz

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-15 and 18-21 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 16, 17, 22 and 23 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5-6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Drawings

This application has been filed with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed. The proposed drawing changes are described in the attached form number 948.

The drawings are also objected to because figures 3B and 3C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference signs not mentioned in the description: 109 and 202. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The abstract of the disclosure is objected to because it is too long. Specifically, the abstract cannot exceed more than 150 words; therefore it needs to be shortened. Correction is required. See MPEP 37 CFR 1.72.

Art Unit: 2873

The specification is objected to for the following reasons: the "Brief Description of the Drawings" refers to Figure 11C, however, the drawings do not include a Figure 11C. It is suggested that the reference to Figure 11C be deleted from the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 9-15, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chern as applied and further in view of Colucci.

Regarding claim 1, Chern discloses the limitations therein including the following: a virtual image display apparatus including a primary image source (Figure 2, "205"), beam splitter (Figure 2, "215"), mirror (Figure 2, "220"), circular polarizer (Figure 2, "225"), and linear polarizer (Figure 2, "230") arranged in a manner that an image passes through the system of these members respectively (Column 5, lines 10-58) and whereby light is substantially blocked before exiting the system (Column 5, line 37-41), therefore reduces the appearance of ghost images behind the image display (Column 1, line 28 through Column 2, line 39). Chern discloses the apparatus as set forth above, but does not disclose that the circular polarizer be arranged between the beam splitter and the mirror. Colucci teaches that an optical path extender for compact image display systems which incorporates an image source, beam splitters, circular polarizer, and mirrors, can further comprise the circular polarizer located between the beam splitter and the mirror so that a desired polarity of light can be formed (Column 3, lines 30-48

Art Unit: 2873

and Column 4, lines 4-7). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made for Chern to have a circular polarizer between the beam splitter and mirror since Colucci teaches in an image display system of similar structure to that of Chern that a circular polarizer can be located between the beam splitter and the mirror so that a desired polarity of light can be formed.

Regarding claims 2, 11, and 20, Chern further discloses that the circular polarizer be a quarter-wave plate (Column 2, lines 61-65).

Regarding claims 5-6, and 14-15, Chern further discloses that the mirror in the system may be either spherical or aspherical (Column 6, lines 25-29).

Regarding claims 9, 18, and 21, Chern further discloses that the beam splitter be placed at a 45-degree angle relative to the primary light path (Figure 1, "120").

Regarding claims 10 and 19, Chern and Colucci disclose and teach a system as set forth above and Colucci further teaches that the light source and target are located on the same optical axis, therefore making the system on-axis for the purpose of making a compact and efficient display system (Figure 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the image display system of Chern and Colucci an on-axis system since Colucci teaches the light source and target located on the same optical axis make a compact and efficient image display system.

Regarding claims 3-4, and 12-13, the examiner takes Judicial Notice that it is well known in the art to have clear substrate layers and anti-reflective coatings on polarizers. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that the quarter wave plate include a clear substrate layer on both surfaces consisting of anti-

Art Unit: 2873

reflective coating to obtain the best performance of the polarizer and achieved the desired form of light.

Allowable Subject Matter

Claims 7-8, 16-17, and 22-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is an examiner's statement of reasons for allowance: none of the prior art either alone or in combination disclose or teach of the claimed combination of limitations to warrant a rejection under 35 USC 102 or 103. Specifically, in reference to claims 7, 8, 16, and 17, none of the prior art either alone or in combination disclose or teach of the claimed display system of a primary image source, mirror, beam splitter, quarter waver plate, linear polarizer, all located within the system as claimed, used to block ghost images, and specifically further comprising additional background projecting means comprising a secondary image source, beam splitter placed between the secondary image source and primary light path to produce a background image viewable with the primary image.

In regard to claims 22 and 23, none of the prior art alone or in combinations disclose or teach of the claimed method of decreasing ghost images using a linear polarizer, beam splitter, mirror, quarter wave plate with the light passing through the system as claimed, as well as projecting a secondary image viewable or superimposing a background image with the first image.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicants.

Myles U.S. Patent No. 3,682,532 discloses an image display system of beam splitters and polarizers used to reduce the distance between the image and the lens in optical display systems.

Knox U.S. Patent No. 6,390,626 discloses an image projection system engine assembly consisting of a beam splitter and polarizer.

Kruezer's U.S. published application 2002/00277718 discloses an optical reduction system with elimination of diffraction induced bias with a quarter wave plate, beam splitter, concave mirror, and lens.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T Stultz whose telephone number is (703) 305-6106. The examiner can normally be reached on M-Th 8-5:30, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703-308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



JS

July 25, 2002



JORDAN SCHWARTZ
PRIMARY EXAMINER